Carrier
United Technologies

48/50A, 48/50N, 48/50P, 48/50Z CO_2 Sensor Accessory

Installation Start-Up and Service Instructions

Part No. CRCBDIOX002A00

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SAFETY CONSIDERATIONS

Installation of this accessory can be hazardous due to system pressures, electrical components, and equipment location (such as a roof or elevated structure).

Only trained, qualified installers and service technicians should install, start up, and service this equipment.

When installing this accessory, observe precautions in the literature, labels attached to the equipment, and any other safety precautions that apply.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care in handling and installing this accessory.

⚠ WARNING

Prior to installation of this accessory, make sure all power is disconnected to the unit and locked out. Failure to disconnect power supply prior to servicing may result in serious injury.

PACKAGE USAGE

UNIT	SIZE
48/50AJ,AK,AW,AY,A2,A3,A4,A5	020-060
48/50N2,N3,N4,N5,N6,N7,N8,N9	75-150 tons
48/50P2,P3,P4,P5	030-100
48/50ZG,ZN	030-105
50Z2,Z3	030-105
48/50ZT,ZW,Z6,Z8	075-105
50ZX,ZZ,Z7,Z9	075-105

GENERAL

The CO_2 sensor (Fig. 1) is designed to monitor carbon dioxide (CO_2) levels in the return air and interface with the *Comfort*Link controller on the rooftop air-conditioning unit. The sensor perceives CO_2 levels in the 0 to 2,000 parts per million (ppm) range and provides outputs indicating this level. The unit utilizes a 4 to 20-mA analog signal. The *Comfort*Link controller uses this signal to control the economizer damper position and ensure adequate level of outside air in the building. This is one of several approved methods of controlling the indoor-air quality (IAQ) in a building and meets the requirements of local building codes and ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Standard 62. The control sensor features a membrane-covered waveguide and sample chamber that produces stable, reliable, and highly accurate carbon dioxide readings.

The sensor is self-calibrating and should not need to be manually calibrated.

Check Package Contents — Remove accessory packaging and inspect shipment for damage. If any damage is found, file a claim with the shipping agent immediately. If any item is missing or any part does not assemble properly, notify your Carrier distributor. Table 1 lists the accessory package contents.

Table 1 — Accessory Package Contents

ITEM	QUANTITY
CO_2 Sensor (Part No. HH99ZZ019)	1
Bracket (48/50A)	1
No. 8-18 x $^1/_4$ Screw	2
$^1/_4$ AB-14 x $^5/_8$ Screw	2
Electrical Harness*	1
Bracket (48/50N,48/50P,48/50Z)	1

*Do not use the electrical harness provided in this kit for 48/50N, 48/50P and 48/50Z units.

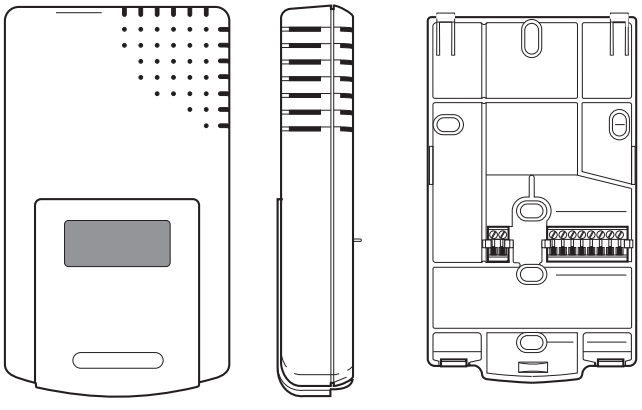

Fig. 1 — CO_2 Sensor

INSTALLATION

48/50A Units — The CO_2 sensor is to be installed in the predrilled holes located above the auxiliary control box (see Fig. 2).

1. Shut off unit power supply.
2. Open the hinged auxiliary control box access door and secure.
3. Remove the sensor and cover from the sensor mounting plate.
4. Secure mounting plate to bracket (48/50A) with no. 8 screws (see Fig. 3).
5. Wire the electrical harness to the sensor as shown in Fig. 3 and 4.
6. Remove the blankout plate from the partition, just above the auxiliary control box.
7. Attach the sensor to the mounting plate.
8. Mount the bracket to the partition using 2 sheet metal screws (see view F in Fig. 2).
9. Connect the electrical harness (PL18).

48/50P and 48/50Z Units — The CO_2 sensor is to be installed in the predrilled holes located in the power exhaust section. See Fig. 5-11.

1. Shut off unit power supply.
2. Open the power exhaust section doors/panels to gain access.
3. Remove the sensor and cover from the sensor mounting plate.
4. Secure mounting plate to the bracket with no. 8 screws.
5. The electrical wire harness for the CO_2 sensor is factory installed. Locate the four wires in the power exhaust section. Wire the electrical harness to the sensor as shown in Fig. 4.
6. Attach the sensor to the mounting plate.

   Mount the bracket to the appropriate location:
   size 030-050 units with power exhaust, see Fig. 5 and 6.
   size 030-050 units with economizer only, see Fig. 7.
   size 030-050 units with no economizer or power exhaust, see Fig. 8.
   48/50P055-100 and 48/50Z055-105 units with power exhaust, see Fig. 9.
   48/50P055-100 and 48/50Z055-105 units with economizer only, see Fig. 10.
   48/50P055-100 and 48/50Z055-105 units with no economizer or power exhaust, see Fig. 11.

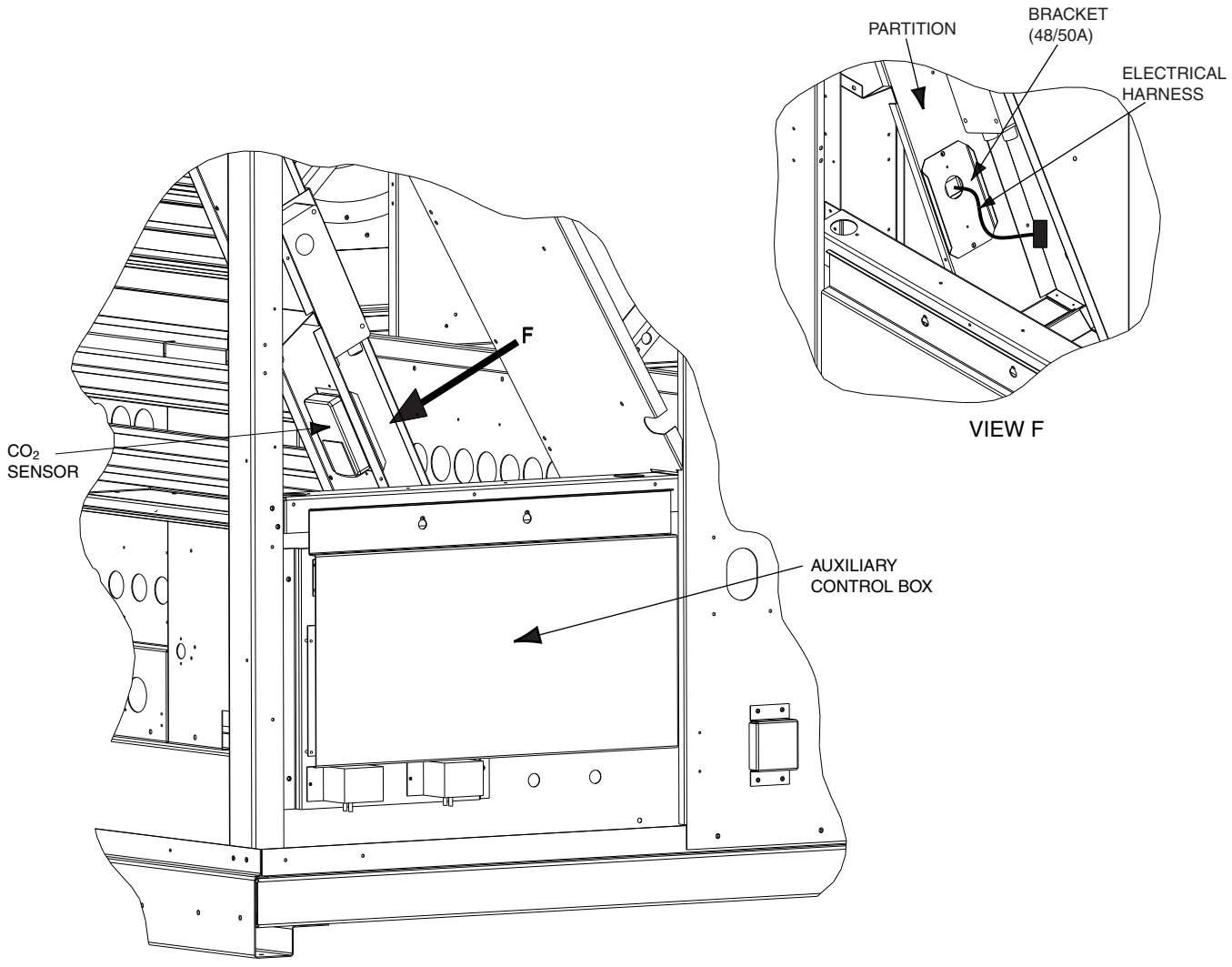

Fig. 2 — 48/50A CO_2 Sensor Mounting Location

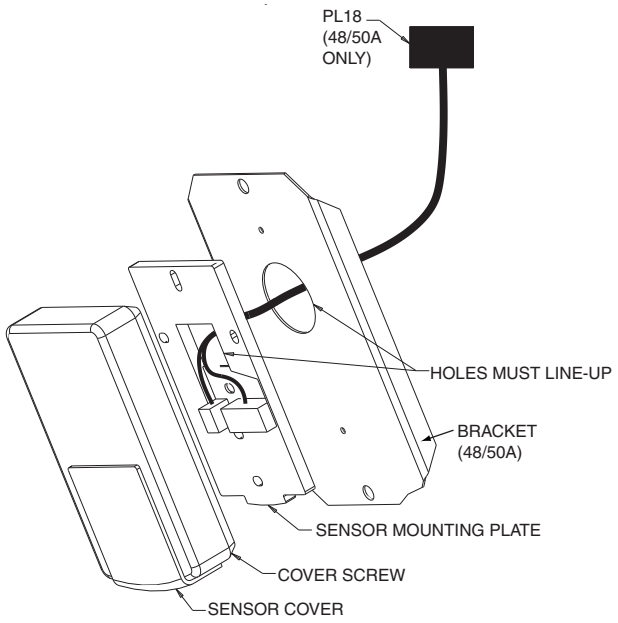

Fig. 3 — CO_2 Sensor Assembly

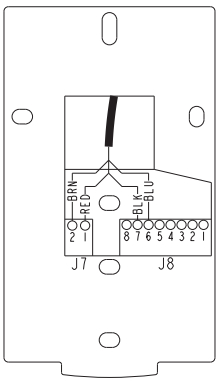

Fig. 4 — Harness Wiring Connections

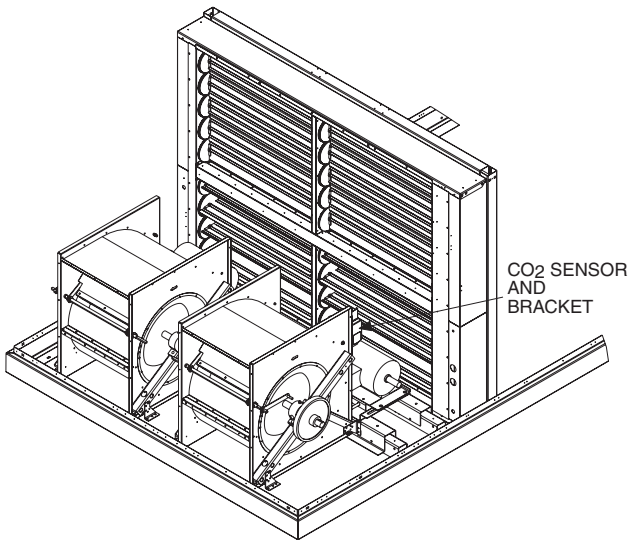

Fig. 5 — CO_2 Bracket for 48/50P030-050 and 48/50Z030-050 Units (Economizer with Power Exhaust)

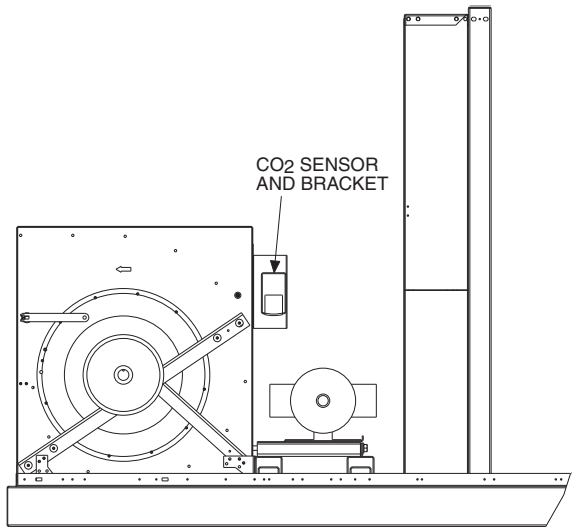

Fig. 6 — CO_2 Bracket for 48/50P030-050 and 48/50Z030-050 Units Side View (Economizer with Power Exhaust)

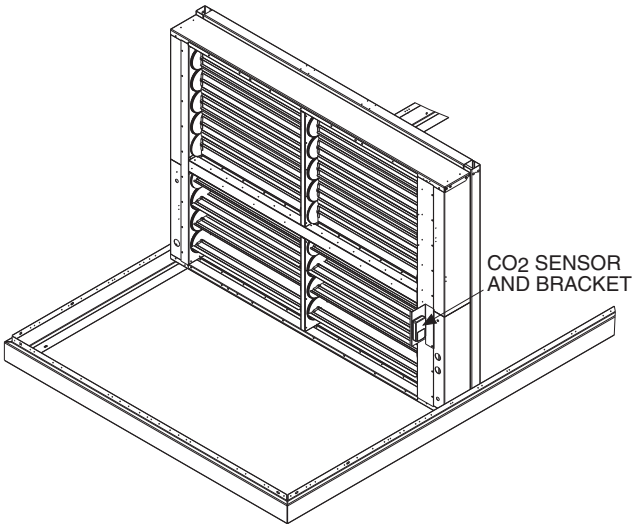

Fig. 7 — CO_2 Bracket for 48/50P030-050 and 48/50Z030-050 Units (Economizer Only)

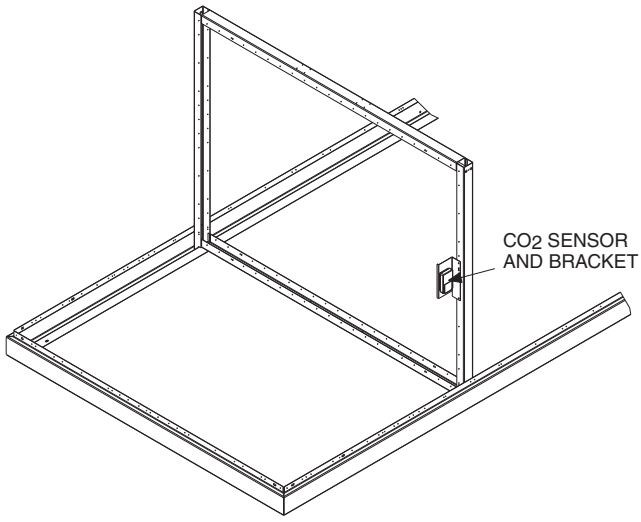

Fig. 8 — CO_2 Bracket for 48/50P030-050 and 48/50Z030-050 Units (No Economizer or Power Exhaust)

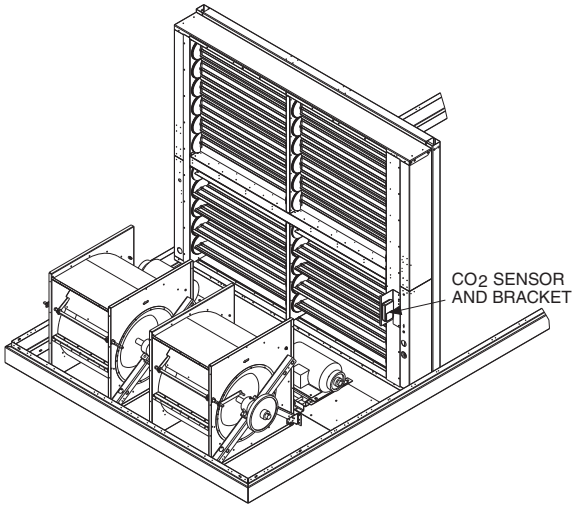

Fig. 9 — CO_2 Bracket for 48/50P055-100 and 48/50Z055-105 Units (Economizer with Power Exhaust)

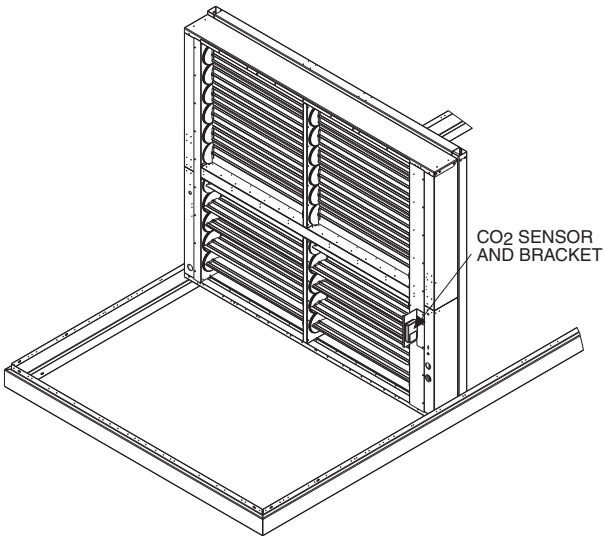

Fig. 10 — CO_2 Bracket for 48/50P055-100 and 48/50Z055-105 Units (Economizer Only)

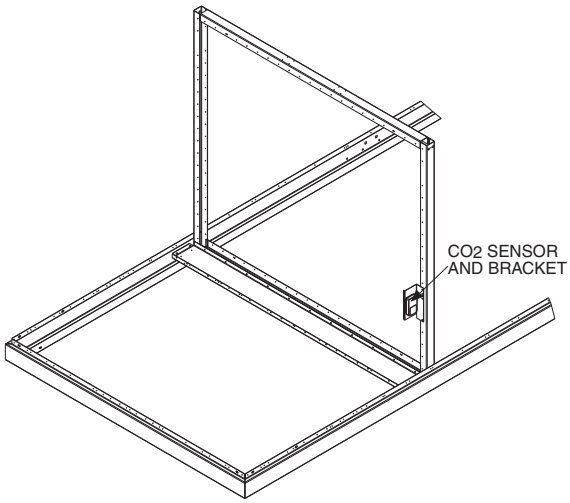

Fig. 11 — CO_2 Bracket for 48/50P055-100 and 48/50Z055-105 Units (No Economizer or Power Exhaust)

48/50N Units — The CO_2 sensor is to be installed in the predrilled holes located in the power exhaust section. See Fig. 12.

1. Shut off unit power supply.
2. Open the power exhaust section doors to gain access.
3. Remove the sensor and cover from the sensor mounting plate.
4. Secure mounting plate to the bracket with no. 8 screws.
5. The electrical wire harness for the CO_2 sensor is factory installed. Locate the four wires in the power exhaust section. Wire the electrical harness to the sensor as shown in Fig. 4.
6. Attach the sensor to the mounting plate. Figure 12 includes power exhaust. Mounting location is the same for units with return fan and no power exhaust.

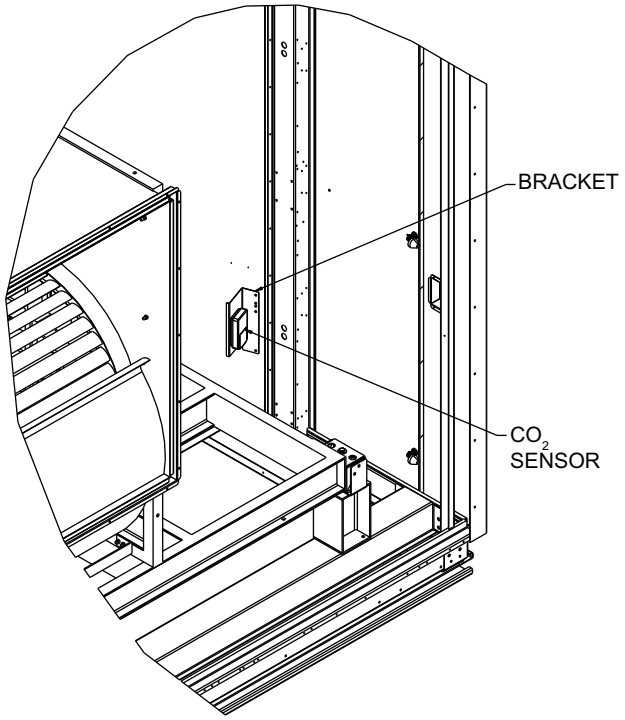

Fig. 12 — 48/50N CO_2 Sensor Mounting Location

START-UP

After applying power, the CO_2 sensor will enter a warm-up mode. Warm-up duration will be from 1 to 10 minutes. The warm-up duration will be shorter in warmer temperatures and longer in cooler temperatures. During warm-up, the signal output will be 4 mA. Once the unit has warmed up, the voltage or current output will be set up to indicate the CO_2 level. The display will show a steady reading 1 minute later.

Configuring the *Comfort*Link Controller — The CO_2 sensor is defaulted to provide 4 mA at 0 ppm and 20 mA at 2000 ppm. If a different range is necessary, contact Carrier Application Engineering to reconfigure the sensor. If the sensor is reconfigured, the mA range on the *Comfort*Link controller must be configured to match the new values. Refer to Controls and Troubleshooting Guide for configuration details.

Sensor Self Calibration — The CO_2 sensors employ a self-calibration system. The system eliminates the need for manual calibration in applications where the indoor CO_2 level drops to outside levels during unoccupied periods (e.g., during evening hours). A special software routine in the sensor remembers the background readings for 14 consecutive evenings, calculates if there is a sensor drift, and then corrects for it.

NOTE: This only applies when used in typical indoor or ambient air conditions. Consult Carrier application engineering if other gases or corrosive agents are part of the application environment.

SERVICE

Cleaning — The controller is a rugged and lightweight unit that requires very little maintenance. Clean external surfaces periodically with a dampened cloth.

TROUBLESHOOTING

The following occurrences may indicate abnormal operation, caused primarily by power input fluctuations, surges, or spikes.

- The unit remains in warm-up mode for more than 10 minutes.
- The LED glows with no pulse.
- CO_2 indication (display numbers or signal output) is frozen.
- Numbers on the display change continuously for longer than 1 minute.

Normal operation can usually be restored by removing power, shutting down the unit for at least 15 seconds, then reconnecting power. The unit should warm up, as described above, then return to normal operation. If the situation continues, remove and replace the sensor.

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